

A RETROSPECTIVE OBSERVATIONAL STUDY ON RECEPTOR STATUS AND CO-MORBIDITIES OR HISTORY OF THYROID DISORDERS AND/OR GALLBLADDER STONES ASSOCIATED WITH BREAST CANCER PATIENTS.

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ABSTRACT

Breast cancer is the commonest cancer found in females and has been increasing alarmingly in India since the last decade or so. In order to understand the risk factors associated with this disease, an observational retrospective study was done on total 110 registered breast cancer patients of the age group 18 to 65 from Jawaharlal Nehru Cancer Hospital and Research Centre (JNCHRC), Bhopal. Patients files from the hospital were analyzed in detail for clinical and pathological information including hormone receptor (HR) status. Medical history with a special focus on co-morbidities like thyroid disorders and gallbladder stone history was recorded. These two diseases have been linked to breast cancer development and the present observational study was aimed to throw light into this connection. Out of the 110 breast cancer patients, the receptor most prevalent was Er+ (39%) followed by Her2+ (30%) and Pr+ (26%). There were 33% triple negative cases and only 7% were triple positive. It was found that out of 110 breast cancer patients 59% had thyroid disorders and 32% had gall bladder disease/stones. A long-term large-scale population-based study is required to come to a firm conclusion to find a link so that aggressive measures could be taken to prevent cancer development in these high-risk categories of females.

KEYWORDS: Breast cancer, co-morbidities, gall bladder stones, receptor status, thyroid disorder.

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INTRODUCTION

Breast cancer is one of the most prevalent cancers in women and in Bhopal, Madhya Pradesh alone it has been increasing at an alarming rate. Some diseases have been linked with the development of breast cancer by various studies; notably, among them are thyroid disorder (thyroidism) and gallbladder stones (cholelithiasis). To find a link between these diseases and mechanism, a number of studies have been done in the last decade. The current research work aims to evaluate the possible association of thyroid disorders and gallbladder stones with carcinoma of breast. A number of breast cancer patients are found to have a history of thyroid problems and/or gallbladder stones indicating a possible role of these diseases in the development of breast cancer. Hyperthyroidism has been shown to pose a higher risk of breast cancer (Mette Sogaard *et al.*, 2016). Similarly, studies have shown a link between gall bladder disease and breast cancer risk (Wysowski *et al.*, 1986 and Shabanzadeh *et al.*, 2017). Large population, lack of screening program or participation in screening program along with lack of awareness are the major reasons for high number of increased cases and high net mortality (Chauhan A, *et al.*, 2011). What is alarming is the fact that more and more younger females of premenopausal age are getting afflicted with breast cancer (Agarwal G, 2007). Besides known risk factors that contribute to the disease, certain medical conditions are also linked with developing breast cancer. These are diabetes mellitus, thyroid disorders, gall bladder stones etc. A number of studies have been done to find an association between these diseases and development of breast cancer. The current retrospective observational study has been done to find a possible link between these medical conditions or co-morbidities as

well as to record and analyze other clinico-pathological characters like receptor status commonly found in breast cancer females. The receptor status of breast cancer, including ER, PR and Her 2, play a crucial role in the development of treatment plan of breast cancer and these receptor status in breast cancer have been established as predictive, prognostic as well as therapeutic indicator. ER, PR and Her 2 receptor status are therapeutic targets for hormonal therapy. Therefore, it is important to note the prevalence of these receptors. Correlation between receptor status and age has been found according to certain studies. Also, a significant study has found correlation between estrogen receptor expression and co-morbidity found in breast cancer (de Decker L *et al.*, 2014).

MATERIALS AND METHODS

Institutional Ethical Approval was taken for the study (IEC No: **779/IEC 225/JNCH/2020**). This is a retrospective observational study of 110 breast cancer patients (age 18-70) whose details were recorded and analyzed from the medical records from JNCHRC, Idgah Hills after obtaining patient informed consent, Bhopal. Their demographic and clinico-pathological details were recorded including receptor status, TNM and medical and surgical history. Special focus was given to receptor status and co-morbidities present in them. Statistical analysis was done.

OBSERVATION AND RESULT

Among the 110 breast cancer patients analyzed, 39% were estrogen receptor (ER) positive, 26% were progesterone receptor (PR) positive and 30% were human epidermal growth factor receptor 2 (Her2) positive, 19% were ER/PR positive and Her 2 negative, 7% were ER/PR/Her-2 positive and 33% were ER/PR/Her-2 negative or triple negative as shown in **Table 1**. Another aspect was correlation of receptor status with age, it was found that older women were more likely to be hormone receptor (both ER and PR) (HR) positive than younger ones.

Table 1: Hormone Receptor Status of Enrolled Breast Cancer Patients

Total No of Patients (N)	ER+ (in %)	PR+ (in %)	Her2+ (in %)	Triple + (in %)	Triple – (in %)	ER/PR+ (HR+)
110	43 (39%)	29 (26%)	17 (30%)	8 (7%)	36 (33%)	21 (19%)

Legends: ER: Estrogen Receptor, PR: Progesterone Receptor, Her2: Human epidermal receptor.

The status of receptors in breast cancer plays important role in the treatment plan as hormonal therapy can be given to receptor positive patients. Triple negative patients on the other hand are not responsive to hormonal therapy and have to be treated with chemotherapy.

As far as co-morbidities are concerned, out of 110 breast cancer patients **65 (59%)** had thyroid disorders and **35 (32%)** had gallbladder stones thus showing a strong association as shown in **Table 2**.

Table 2: Breast Cancer Patients with Co-Morbidity or History of Thyroid Issues or Gallbladder Stones

Total No of Breast Ca Patients (N)	BGB	BTH
110	35 (32%)	65 (59%)

Legends: BTH: Breast Ca patients with Thyroid disorders,

BGB: Breast Ca patients with gall bladder stones

CONCLUSIONS

Understanding the role that co-morbid conditions or history of certain medical conditions play in breast cancer development is important because co-morbidities influence decisions about treatment plan and are independent risk factors for survival. History of certain prevalent diseases can be indicative of their link or association with the carcinogenesis process. For example, the high prevalence of thyroid problems in breast cancer patients is indicative of its association with breast cancer development. Patients with gall bladder stones or a history of gall bladder stones were also prevalent (32%) in the registered breast cancer patients. This is a preliminary study covering a small sample size. Large scale study needs to be done to come to a firm conclusion and to find a mechanism to understand the link between these diseases and their patho-physiology that may lead to breast cancer development. Besides these conditions, receptor status of breast cancer plays an important role in the treatment plan and is a clinically established parameter that is tested. It also influences the prognosis of a patient as supported by certain studies that have demonstrated that **breast cancer** patients with tumors that are estrogen **receptor** (ER)-positive and/or progesterone **receptor** (PR)-positive have lower risks of mortality after their **diagnosis** compared to women with ER- and/or PR-negative disease (Dunnwald *et al.*,2007). Thus, more studies need to be done to understand the role of receptor status in the prognosis of breast cancer.

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